

IN THE CLAIMS:

Please amend Claims 3 and 16 to read as follows.

1. (Original) An image pickup apparatus, comprising:

a plurality of pixels which are two-dimensionally arranged on a substrate, each of the plurality of pixels comprising a set of a semiconductor conversion element that converts an incident electromagnetic wave into an electrical signal and a switching element connected with the semiconductor conversion element;

a drive wiring which is commonly connected with the plurality of switching elements arranged in a direction; and

a signal wiring which is commonly connected with the plurality of switching elements arranged in a direction different from the direction,

the switching element comprising a first semiconductor layer, the semiconductor conversion element being formed after the switching elements are formed and comprising the second semiconductor layer formed after the first semiconductor layer is formed,

wherein the semiconductor conversion element has an electrode formed outside a region in which two of the drive wiring, an electrode of the switching element, and the signal wiring overlap each other, exclusive of at least part of a region above the drive wiring and at least part of a region above the electrode of the switching element.

2. (Original) An image pickup apparatus according to claim 1, wherein the electrode of the semiconductor conversion element is further formed so as not to be formed in at least part of a region above the signal wiring.

3. (Currently Amended) An image pickup apparatus according to claim 1, wherein a region where the electrode of the semiconductor conversion element is not formed is formed in the vicinity of the region where the two of the drive wiring, the electrode of the switching element, and the signal wiring overlap each other.

4. (Original) An image pickup apparatus according to claim 1, wherein the semiconductor conversion element has an upper electrode and a lower electrode and one of the upper electrode and the lower electrode is connected to the switching element.

5. (Original) An image pickup apparatus according to claim 1, wherein the second semiconductor layer formed on a region corresponding to the switching element is thinner than the second semiconductor layer formed on the electrode of the semiconductor conversion element.

6. (Original) An image pickup apparatus according to claim 1, wherein the second semiconductor layer is not formed on the region corresponding to the switching element.

7. (Original) An image pickup apparatus according to claim 1, wherein the switching element comprises a thin film transistor.

8. (Original) An image pickup apparatus according to claim 1, wherein the semiconductor conversion element is an MIS type semiconductor conversion element comprising an insulating layer, a semiconductor layer, an ohmic contact layer, and electrode layers formed so as to sandwich the insulating layer, the semiconductor layer, and the ohmic contact layer.

9. (Original) An image pickup apparatus according to claim 1, wherein the semiconductor conversion element is a PIN type semiconductor conversion element comprising an n-type semiconductor layer, an i-type semiconductor layer, a p-type semiconductor layer, and electrode layers formed so as to sandwich the n-type semiconductor layer, the i-type semiconductor layer, and the p-type semiconductor layer.

10. (Original) An image pickup apparatus, comprising:
a plurality of pixels which are two-dimensionally arranged on a substrate, each of the plurality of pixels comprising a set of a semiconductor conversion element that converts an incident electromagnetic wave into an electrical signal and a switching element connected with the semiconductor conversion element;
a drive wiring which is commonly connected with the plurality of switching elements arranged in a direction; and

a signal wiring which is commonly connected with the plurality of switching elements arranged in a direction different from the direction,

the switching element comprising a first semiconductor layer; the semiconductor conversion element being formed above the switching element and comprising a second semiconductor layer different from the first semiconductor layer,

wherein the semiconductor conversion element has an opening formed outside a region in which two of the drive wiring, an electrode of the switching element, and the signal wiring overlap each other and in at least part of a region above the drive wiring and at least part of a region above the electrode of the switching element.

11. (Original) An image pickup apparatus according to claim 10, wherein the opening is formed in the vicinity of the region where the two of the drive wiring, the electrode of the switching element, and the signal wirings overlap each other.

12. (Original) An image pickup apparatus according to claim 10, wherein the opening is further formed in at least part of a region above the signal wiring.

13. (Original) An image pickup apparatus, comprising:
a plurality of pixels which are two-dimensionally arranged on a substrate, each of the plurality of pixels comprising a set of a semiconductor conversion element that converts an incident electromagnetic wave into an electrical signal and a switching element connected with the semiconductor conversion element;

a drive wiring which is commonly connected with the plurality of switching elements arranged in a direction; and

a signal wiring which is commonly connected with the plurality of switching elements arranged in a direction different from the direction,

the switching element comprising a first semiconductor layer, the semiconductor conversion element being formed above the switching element and comprising a second semiconductor layer different from the first semiconductor layer,

wherein the electrode of the semiconductor conversion element is removed at least in vicinities of the region where the switching element is formed and in part of the drive wiring.

14. (Original) A radiation image pickup apparatus comprising the image pickup apparatus according to any one of claims 1 to 13, wherein:

the semiconductor conversion element of the image pickup apparatus comprises a photoelectric conversion element;

the electromagnetic wave comprises light; and

a wavelength conversion layer for converting a radiation into the light within a wavelength region which can be converted by the photoelectric conversion element is formed on the photoelectric conversion element.

15. (Original) A radiation image pickup apparatus comprising the image pickup apparatus according to any one of claims 1 to 13, wherein:

the semiconductor conversion element of the image pickup
apparatus comprises an element for directly converting a radiation into an electrical signal;
and

the electromagnetic wave comprises the radiation.

16. (Currently Amended) A radiation image pickup system comprising:
the radiation image pickup apparatus according to claim 14 ~~or 15~~;
a signal processing unit for processing a signal from the radiation
image pickup apparatus;
a recording unit for recording a signal from the signal processing
unit;
a display unit for displaying the signal from the signal processing
unit;
a transmission unit for transmitting the signal from the signal
processing unit; and
a radiation source for generating the radiation.